Brüel & Kjær

Service

Human-vibration Unit
Type 2522

Valid from serial no. 1469063

Updating

Due to the constant progress in technology the instrument will from time to time be brought up to date in order to provide continuously improved performance.

For this reason there may be small variations between the instrument and the Service Instruction.

However, the local Service Representative has all information regarding any change made.

Spare Parts

Please state type and serial number of the instrument when ordering spare parts.

Trouble Shooting

If any fault should occur, check the instrument according to the checking procedure.

Before correcting any apparent deviation make sure that the measuring instrument has tolerances small enough not to affect the measurement.

When a fault has been traced and corrected, the voltages and adjustments influenced by the correction must be rechecked. The complete instrument should then be tested to make sure that all basic functions are operative.

The tolerances given in these notes are intended for use as guide for adjustments.

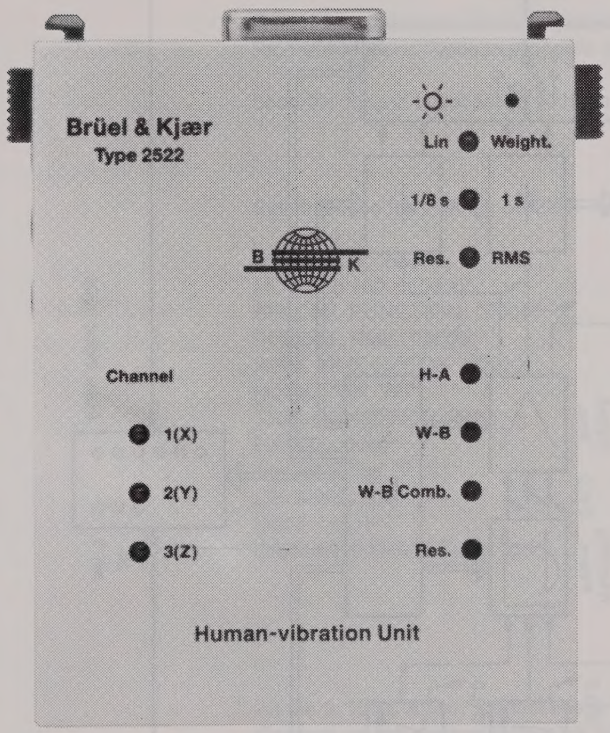
Tools and Equipment needed

The following tools and equipment are necessary to service the 2522.

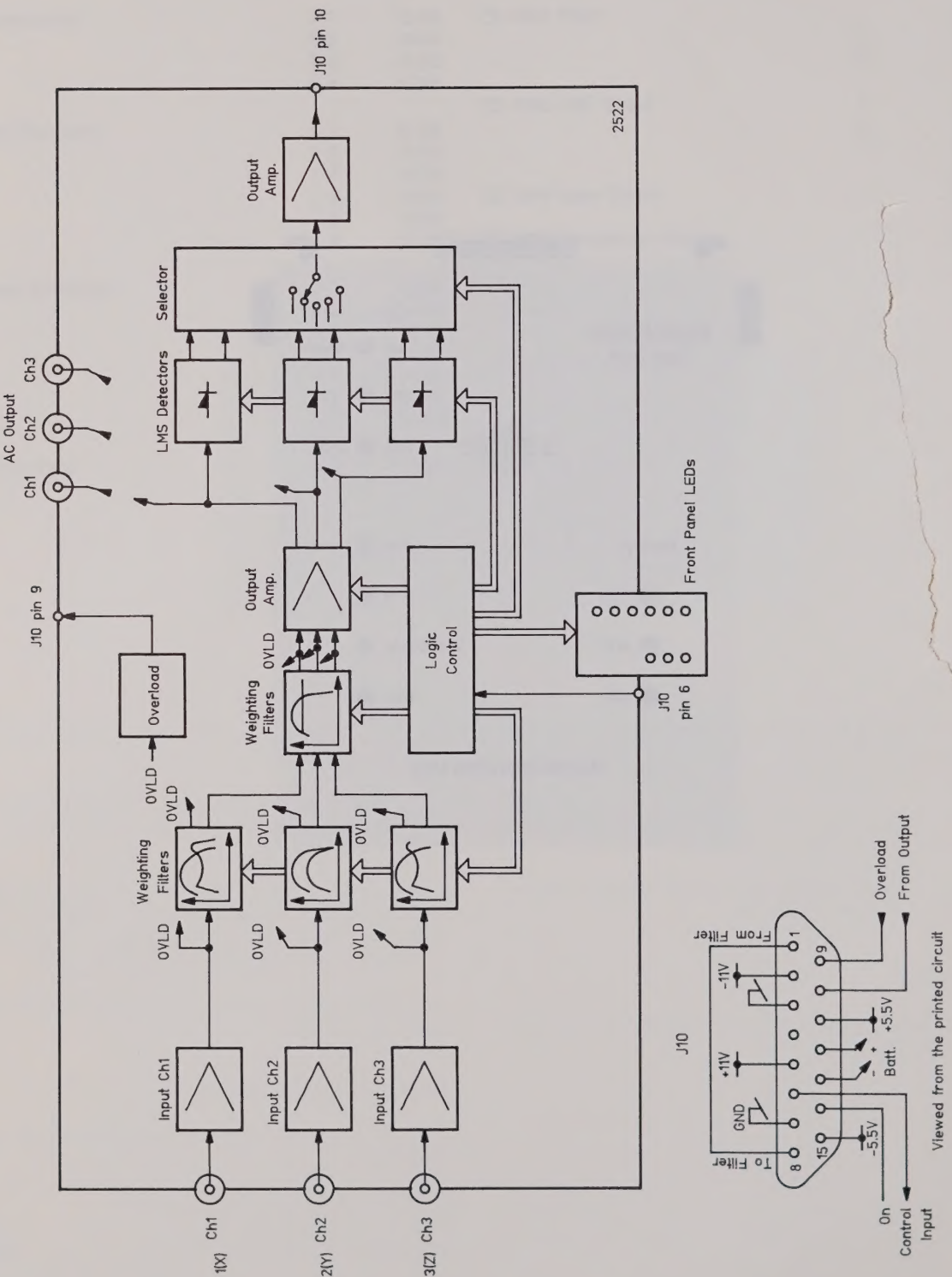
Modular Precision Sound Level Meter	2231
Human-Vibration Module	BZ7105
1nF capacitor + connectors	WB0251

Consisting of:	page	date
Service Instruction	0-1	10.90
- -	0-2	10.90
- -	0-3	10.90
- -	0-4	10.90
Checking Procedure	1-1	10.90
- -	1-2	10.90
- -	1-3	10.90
- -	1-4	10.90
- -	1-5	10.90
- -	1-6	10.90
Adjustment Procedure	2-1	10.90
- -	2-2	10.90
- -	2-3	10.90
- -	2-4	10.90
- -	2-5	10.90
- -	2-6	10.90
- -	2-7	10.90
Mechanical Parts	3-1	10.90

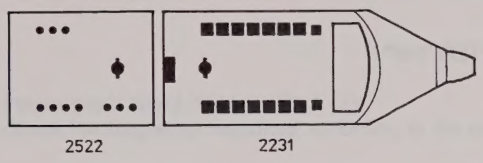
	page	date
ZE 0584 Filter	1	8.88
- -	2	8.88
- -	3	8.88
ZE 0585 LMS Circuit	1	8.88
- - -	2	8.88
- - -	3	8.88
ZE 0586 Input Circuit	1	8.88
ZE 0639 Condenser Circuit	1	10.90


Brüel & Kjær
Type 2522
Lin
Weight.
1/8 s
1 s
B K
Res.
RMS
Channel
1(X)
2(Y)
3(Z)
H-A
W-B
W-B Comb.
Res.
Human-vibration Unit

BLOCK DIAGRAM



Connect the Human-vibration Unit to the Modular Precision Sound Level Meter Type 2231.



Front Plate: "Human-vibration Module BZ7105"
Program Module: "Human-vibration BZ7105"

Load the Sound Level Meter with the application module "BZ7105"

POWER: "On"

Set/check the front knobs on 2231 as follows:

LOAD/RUN: "Run"
MODULE NO 6: "M-6"
SPECIAL FUNCTION: "F000"
PRESET TIME: "00.00"
REAL TIME CLOCK: "XX.XX"
MODE: "HA: WT"
TIME CONSTANT: "1s"
RANGE: "High"
RECORD no: "R_01"
CHANNEL: "X"
UNIT: "ms-2"
DISPLAY PARAMETER: "Inst"

Sensitivity

MODE: "WB: LT"
UNIT: "dB"
RANGE: "low"
TIME CONSTANT: "1/8s"

All the 3 "Sens Adjust" potentiometers must be turned to cal.
Connect an input signal through a 1nF ±0.3% capacitor. (Adaptor WB 0251) to Ch.1 (X).
Input: 10.0mV, 8Hz.
Check the display reading: 140.0 ±0.3dB.
Check the voltage at "AC Output Ch.1": 500.0 ±15.8mV.

DISPLAY PARAMETER: "Peak"
DISPLAY PARAMETER: "Maxp"
DISPLAY PARAMETER: "Maxl"
DISPLAY PARAMETER: "Aeq"
DISPLAY PARAMETER: "Inst"
UNIT: "ms-2"

Display reading: 143.0 ±0.5dB
Display reading: 143.0 ±0.5dB
Display reading: 140.0 ±0.4dB
Display reading: 140.0 ±0.4dB

Display reading: 10.0ms-2

Check also "Sensitivity" for Ch.2 (Y) and Ch.3 (Z).

Linearity

UNIT: "dB"
RANGE: "High"
MODE: "WB:WT"
DISPLAY PARAMETER "Inst"

Input signal: 8Hz

	WB - X-Y Ch.1 and Ch.2	WB - Z Ch.3
Signal input	39.53mV	11.07mV
Display reading	140.0 ±0.4dB	140.0 ±0.4dB
AC output mV	500 ±20mV	500 ±20mV

Check the linearity according to the table below:

Changes in input voltage dB		+20	+10	0	-10	-20	-30	-40
Display reading	dB	160.0	150.0	140.0	130.0	120.0	110.0	100.0
Tolerance	± dB	0.5	0.3	REF	0.2	0.3	0.4	0.5
AC output	mV	5000	1581.00	500	158.100	50.0	15.8100	5.0
Tolerance	± mV	100	15.81	REF	1.581	0.5	0.1581	0.1

RANGE: "Low"

Input signal 3.953mV, 8Hz (Ch.1 and Ch.2) or 1.107mV (Ch.3)
Check display reading to be 120.0 ±0.3dB

MODE to "WB:LT"
RANGE to "High"

Adjust the input signal to give 140.0dB on the display.

Check the linearity again according to the table above (display readings only).

Check also "Linearity" for Ch.2 (Y) and Ch.3 (Z).

Filter Network

H-A linear frequency weighting (Triaxial mode)
H-A frequency weighted (Triaxial mode)
for Ch.1 (X), Ch..2 (Y) and Ch.3 (Z).

RANGE: "Low"
CHANNEL: "X"
TIME CONSTANT: "1s"

Input signal: 10mV, 80Hz to Ch.1 (X)
Check the frequency response according to the table below:

Frequency Hz	Display reading		Tolerance		
	Mode HA:LT dB	Mode HA:WT dB	+ dB		-
80.0	160.0	146.1	0.3	Ref.	0.3
0.8 *0	144.1	144.1	2.0		20.0
4.0	151.5	151.6	2.0		2.0
10.0	159.4	159.6	1.0		1.0
16.0	159.9	159.0	1.0		1.0
795.0	160.0	125.4	1.0		1.0
2000.0	151.4	149.4 *1	2.0		1.5
10000.0 **	174.0	118.0	1.8		20.0

*0 Input signal +20dB (100mV)
*1 Input signal: +40dB (1V)
** Input signal: +50dB (3.162V)

Check also "Hand-Arm" for Ch.2 (Y) and Ch.3 (Z) according to the table above.

Whole-Body

Linear frequency weighting (Triaxial mode)
Frequency weighted (Triaxial mode)
Ch.1 (X) and Ch.2 (Y)

RANGE: "Low"
CHANNEL: "X"

Input signal: 10.0mV, 8Hz to Ch.1 (X).
Check the frequency response according to the table below.

Frequency Hz	Display reading		Tolerance dB		
	Mode WB:LT dB	Mode WB:WT dB	+		-
8.00	140.0	128.0	0.3	Ref	0.3
0.25	120.0	120.0	2.0		20.0
0.50	131.3	131.5	1.8		1.5
1.25	139.3	139.5	1.0		1.0
2.00	139.9	139.0	1.0		1.0
65.00	139.3	109.0	1.0		1.0
157.50	131.5	113.5 *0	2.0		2.0
795.00**	154.0	102.0	2.0		20.0

** Input signal: +50dB (3.162V)
*0 Input signal +20dB (100mV)

Check also "Whole-Body" for Ch.2 (Y) according to the table above.

Ch.3 (Z)

RANGE: "Low"
CHANNEL: "Z"

Input signal: 10.0mV, 8Hz to Ch.3 (Z)
Check the frequency response according to the table below:

Frequency Hz	Display reading Mode WB:WT dB	Tolerance + dB		-
8.00	139.1	0.3	Ref	0.3
0.25	112.5	2.0		20.0
0.50	124.3	1.8		1.5
1.25	134.2	1.0		1.0
5.0*	120.5	1.0		1.0
65.00	121.0	1.0		1.0
157.50	105.4	2.0		2.0
795.00**	104.0	2.0		20.0

* Input signal -20dB (1mV)
** Input signal +40dB (1V)

Frequency weighted (Monoaxial mode)
Ch.2 (Y)

RANGE: "Low"
CHANNEL: "Y"
MODE: "WB:CW"

Input signal: 10.0mV, 8Hz to Ch.2(Y).

Check the frequency response according to the table below.

Frequency Hz	Display reading Mode WB:CW dB	Tolerance + dB		-
8.00	115.3	0.3	Ref	0.3
0.25	99.9	2.0		20.0
0.50	111.3	1.8		1.5
1.25	119.2	1.0		1.0
2.00	119.4	1.0		1.0
65.00	98.1	1.0		1.0
157.50	82.6	2.0		2.0
795.00*3	81.1	2.0		20.0

*3 Input signal: +40dB (1V)

Overload

RANGE: "Low"
CHANNEL: "X"
MODE: "HA:LT"

Input signal: 120mV, 80Hz.

Check that the Overload indication on the Display lights.

Decrease the input voltage to 100mV.

Check that the Overload indication on the Display does not light.

Check also "Overload" for Ch.2 (X) and Ch.3 (Z).

Noise

RANGE: "Low"
CHANNEL: "X"

Short circuit Ch.1 (X) input to its own shield through a 1nF capacitor.

Check the noise according to the table.

Mode	Display reading
WB:LT	U----
WB:WT	Less than 81dB
HA:WT	Less than 105dB
HA:LT	U----

Check also "Noise" Ch.2 (Y) and Ch.2 (Z) according to the table above.

Noise Combined

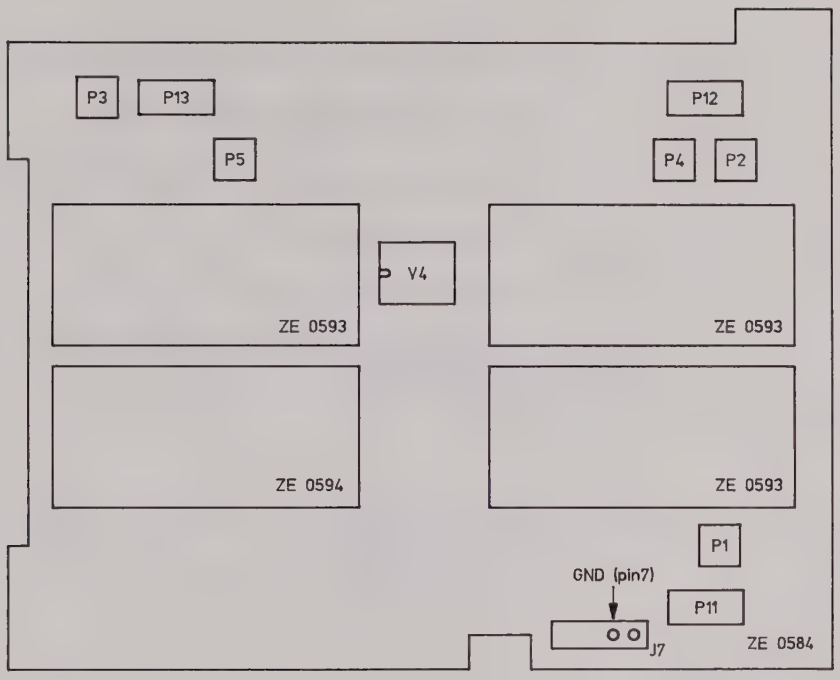
RANGE: "Low"
CHANNEL: "Y"

Short circuit Ch.2 (Y) input to its own shield through a 1nF capacitor.

Check the noise according to the table below.

Mode	Display reading
WB:CW	Less than 61dB

2.1 Filters



POWER: "On"

Set/check the front knobs on 2231 as follows:
LOAD/RUN: "Run"
MODULE NO 6: "M-6"
SPECIAL FUNCTION: "F000"
PRESET TIME: "00.00"
REAL TIME CLOCK: "XX.XX"
MODE: "HA:WT"
TIME CONSTANT: "1s"
RANGE: "High"
RECORD NO: "R_01"
CHANNEL: "X"
UNIT: "ms^{-2}"
DISPLAY PARAMETER: "Inst"

Gain Adjust, Ch. 1

RANGE to: "Low"
CHANNEL to "1 (X)"
MODE to "WB LT"
UNIT to "dB"

Connect a generator through 1nF capacitor (WB0251) to Ch.1 (X).

Sense Adjustment Potentiometer P11 to Cal.
Input signal: 10mV, 8Hz

Check the display reading: 140.0 ±0.1dB

If necessary adjust P1

Check AC output: 500 ±18mV

Check range for Sense Adjust Potentiometer P11 to be at least -2.3dB to +1dB gain range.

Gain Adjust, Ch. 2

CHANNEL to "Y"

Connect a generator through 1nF capacitor (WB0251) to Ch. 2 (Y).

Sense Adjustment Potentiometer P12 to Cal.
Input signal: 10mV, 8Hz

Check the display reading: 140.0 ±0.1dB

If necessary adjust P2

Check AC output: 500 ±18mV

Check range for Sense Adjust potentiometer P12 to be at least -2.3dB to +1dB gain range.

Gain Adjust, Ch. 3

CHANNEL to "Z"

Connect a generator through 1nF capacitor (WB0251) to Ch. 3 (Z).

Sense Adjustment Potentiometer P13 to Cal.
Input signal: 10mV, 8Hz

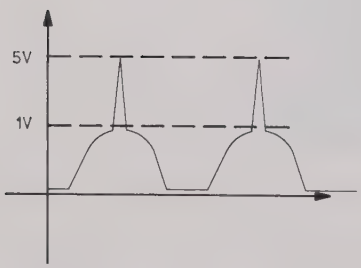
Check the display reading: 140.0 ±0.1dB

If necessary adjust P3

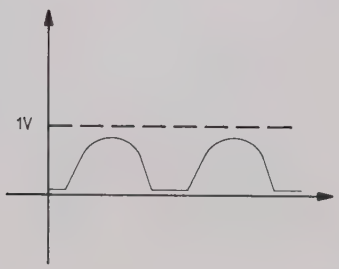
Check AC output: 500 ±18mV

Check range for Sense Adjust Potentiometer P13 to be at least -2.3dB to +1dB gain range.

Overload



V4 pin1
Input signal 112.20mV

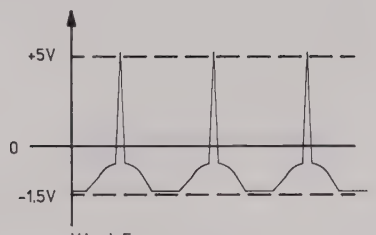


V4 pin1
Input signal 106.00mV

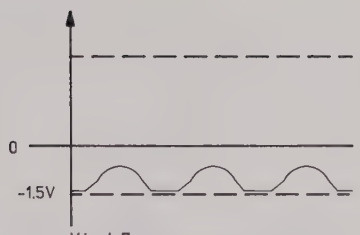
RANGE to: "Low"
MODE to: "HA: LT"
CHANNEL to "Y"

Input signal 112.20mV, 80Hz.
Connect an oscilloscope to V4, pin 1.
Check that the signal is as shown.
If necessary adjust P5 until the signal changes to that shown.

Input signal to 106.00mV, 80Hz.
Check that the signal is as shown.
If necessary adjust P5 until the signal changes to that shown, and repeat the complete adjustment.



V4 pin7
Input signal 112.20mV



V4 pin7
Input signal 106.00mV

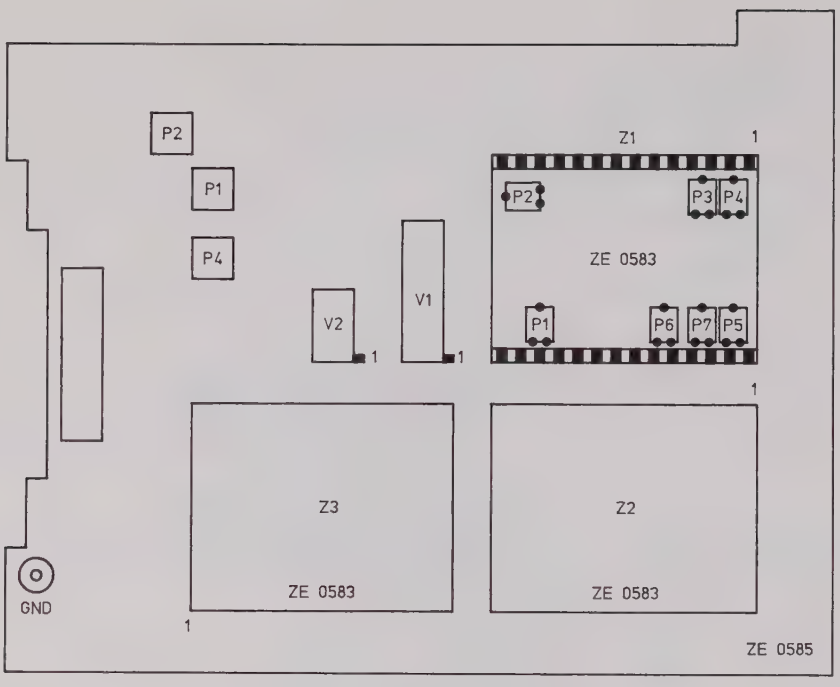
Input signal to 112.20mV, 80Hz.
Connect an oscilloscope to V4, pin 7.
Check that the signal is as shown.
If necesary adjust P4 until the signal changes to that shown.

Input signal to 106.00mV, 80Hz.
Check that the signal is as shown.
If necessary adjust P4 until the signal changes to that shown, and repeat the complete adjustment.

2.2 LMS Circuit

POWER: "On"

Set the front knobs on 2231 as follows:
LOAD/RUN: "Run"
MODULE NO 6: "M-6"
SPECIAL FUNCTION: "F000"
PRESET TIME: "00.00"
REAL TIME CLOCK: "XX.XX"
MODE: "HA:WT"
TIME CONSTANT: "1s"
RANGE: "High"
RECORD NO: "R_01"
CHANNEL: "X"
UNIT: "ms^{-2}"
DISPLAY PARAMETER: "Inst"



Reference Voltage

Connect a DC Voltmeter to the Circuit Z1 pin 24 (ZE0583).
Check the voltage: +2490 ±1mV
If necessary adjust P1 (ZE0585).

Connect a DC Voltmeter to the Circuit Z1 pin 16 (ZE0583).
Check the voltage: -2490 ±1mV
If necessary adjust P2 (ZE0585).

Output Amplifier Offset

POWER to "Off"

Remove V1 from its socket.
Connect V2 pin 3 to GND.
Connect a DC Voltmeter to J10 pin 10.

POWER to "On"

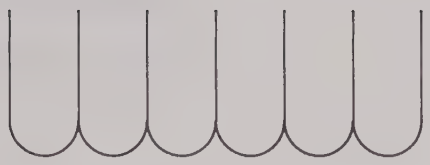
Check the voltage: 4400 ±3mV.
If necessary adjust P4.

POWER to "Off"

Remount V1.

LMS Detector

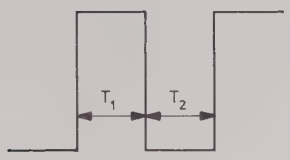
Follow the same procedure for all 3 channels:
Connect a generator through 1nF capacitor (WB0251) to Ch.1 (X), Ch.2 (Y) or Ch.3 (Z) as required.



Detector Balance

UNIT to "dB"

Input signal: 80mV, 40Hz (Adjust the input voltage to 1581mV AC output).
Connect an oscilloscope to pin 20 on ZE0583 (Ch.1: Z1, Ch.2: Z2, Ch.3: Z3).
Check that the curves are at equal level.
If necessary adjust P2 (ZE0583).



Detector Symetric

Input signal: Decrease the signal by 50dB, (5mV on AC output).
Connect an oscilloscope to pin 22 on ZE0583.
Check that the curves are equal $T_1 = T_2$
If necessary adjust P1 (ZE0583).

Detector Level and Gain

Input signal: Increase the signal by 10dB, 160Hz
Adjust the input voltage to 15.81mV on AC output.
Connect a DC Voltmeter to pin 12 on ZE0583.
Check the voltage: 500 ±3mV
If necessary adjust P4 (ZE0583).

Input signal: Increase the signal by 30dB, (500mV on AC output).
Check the voltage: 2000 ±3mV
If necessary adjust P5 (ZE0583).

Repeat the two adjustments as they influence each other.

If necessary, follow the same procedure for the other 2 channels.

Peak Detector Level and Gain

Follow the same procedure for all 3 channels.
Input signal: Decrease the signal by 30dB, (15.81mV on AC output).
Connect a DC Voltmeter to pin 7 on ZE0583 (Ch.1: Z1, Ch.2: Z2, Ch.3: Z3).
Check the voltage: 650.50 ±3.00mV
If necessary adjust P7 (ZE0583).

Input signal: Increase the signal by 40dB, (1.58V on AC output).
Check the voltage: 2650.50 ±3mV
If necessary adjust P6 (ZE0583).

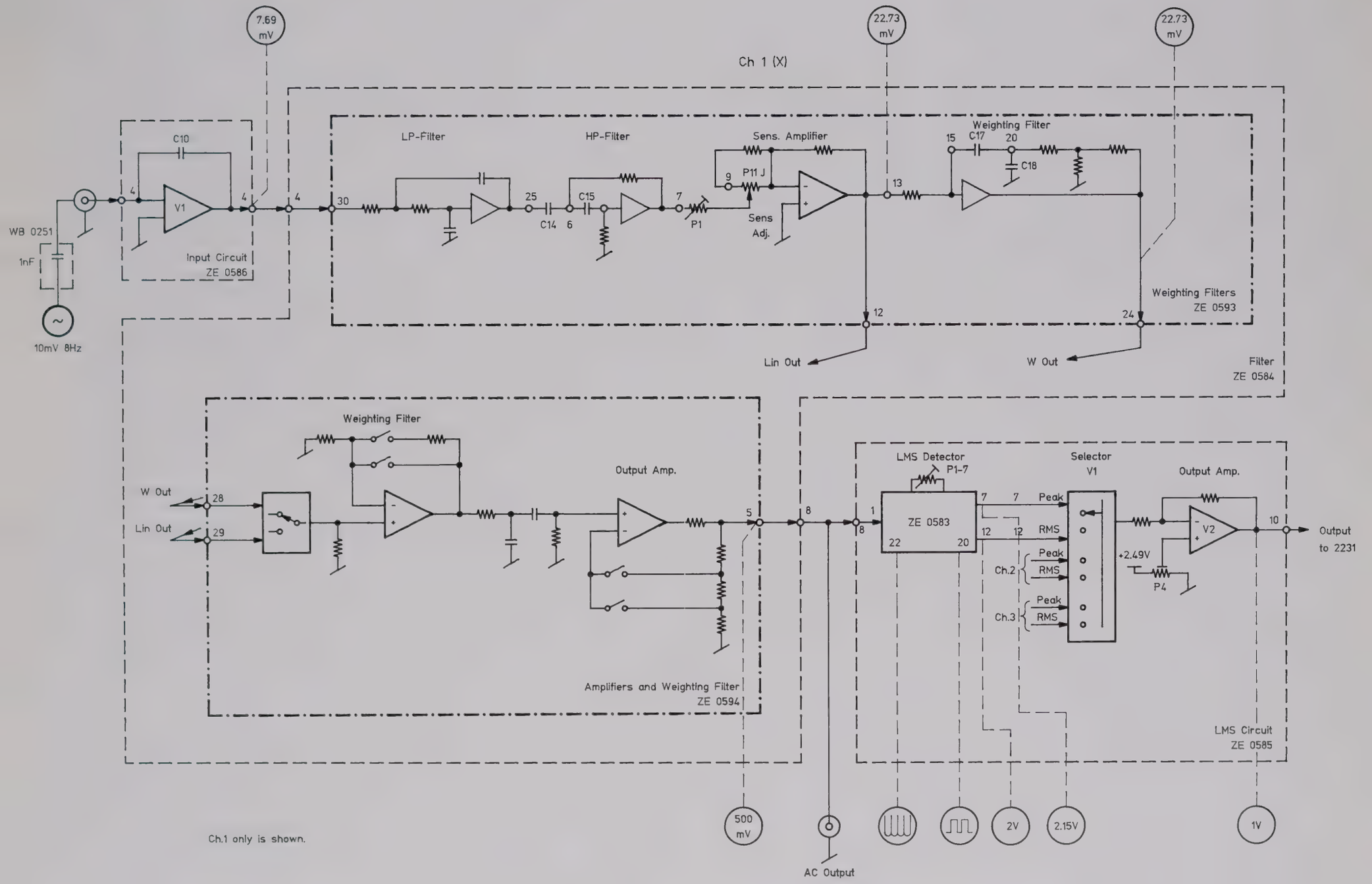
Repeat the two adjustments as they influence each other.

LMQ Detector

DISPLAY PARAMETER to "AEQ"

Follow the same procedure for all 3 channels.
Input signal: Decrease the signal by 40dB, (15.81mV on AC output).
Connect a DC voltmeter to pin 12 on ZE0583 (Ch.1: Z1, Ch.2: Z2, Ch.3: Z3).
Check the voltage: 555 ±3mV.
If necessary adjust P3 (ZE 0583).

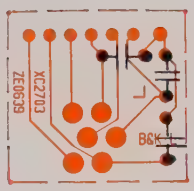
Input signal: Increase the signal by 40dB, (1.58V on AC output).
Check the voltage: 2555 ±5mV.
If necessary, follow the same procedure for channels 2 and 3.


7.69 mV
22.73 mV
22.73 mV
Ch 1 (X)
C10
LP-Filter
HP-Filter
Sens. Amplifier
Weighting Filter
C17
C18
P11 J
Sens Adj.
C14
C15
P1
V1
WB 0251
1nF
10mV 8Hz
Input Circuit ZE 0586
Weighting Filters ZE 0593
Lin Out
W Out
Filter ZE 0584
Weighting Filter
Output Amp.
W Out
Lin Out
Amplifiers and Weighting Filter ZE 0594
LMS Detector
P1-7
ZE 0583
Selector V1
Output Amp.
Peak
RMS
Ch.2
Ch.3
+2.49V
P4
V2
Output to 2231
LMS Circuit ZE 0585
500 mV
AC Output
2V
2.15V
1V
Ch.1 only is shown.

Condenser Circuit

ZE 0639

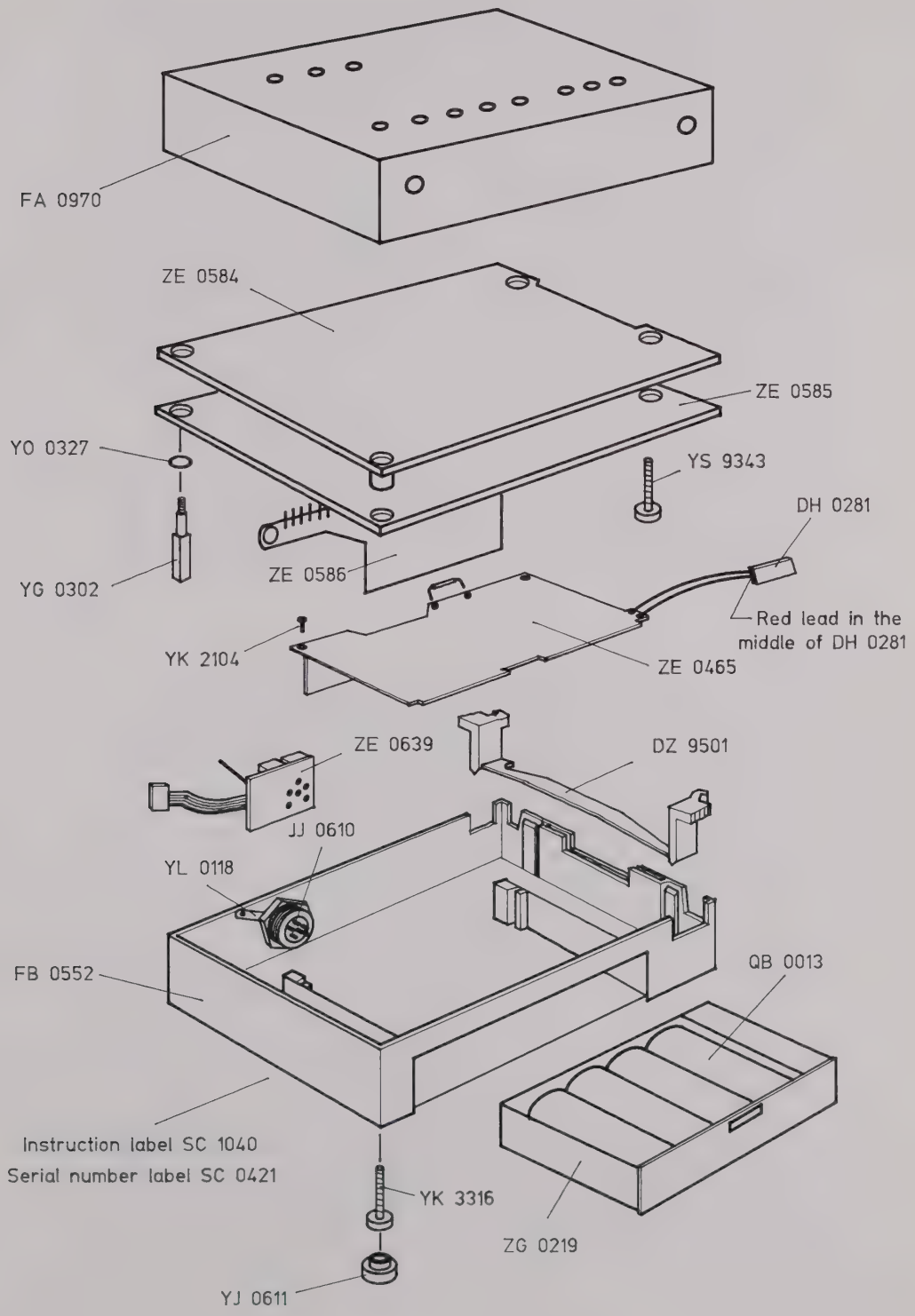
Viewed from the component side

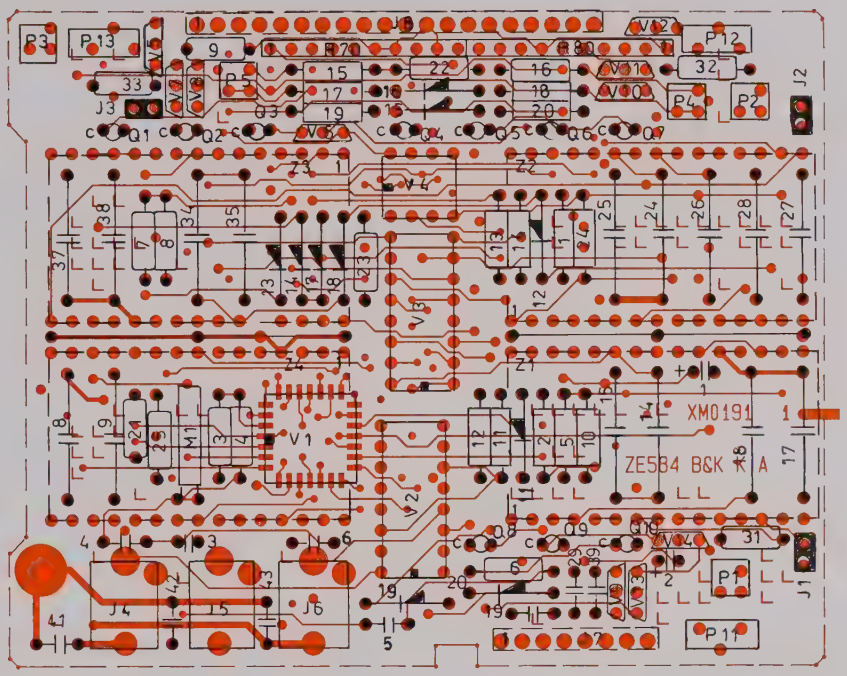


Viewed from the solder side

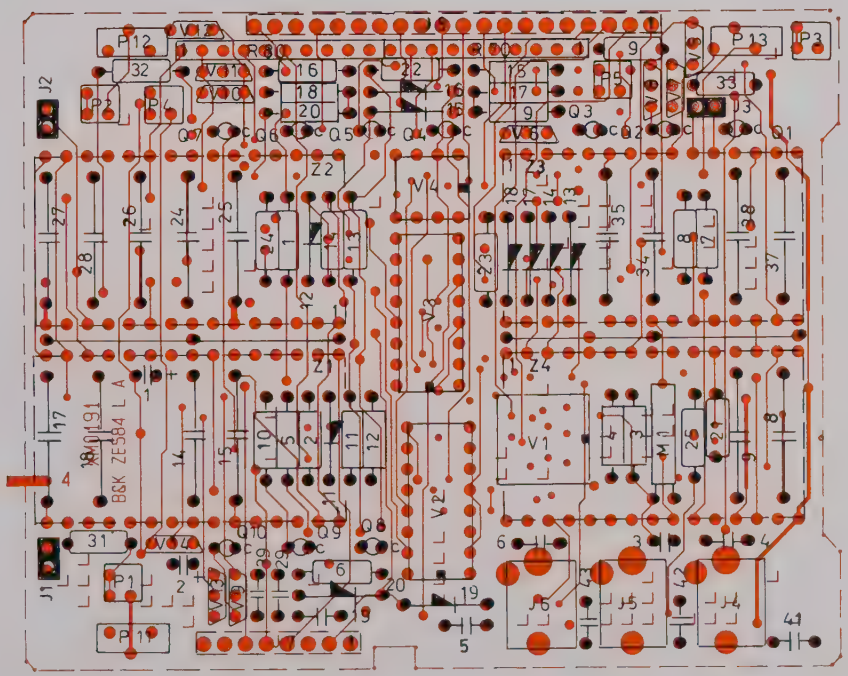
C 1-3	Polyester	5%	100nF/50V	CS 0468

Socket w. cable	AQ 1505
Flatcable	AP 7010
Socket	JJ 0057
Printed Circuit Board	XC 2703


FA 0970
ZE 0584
ZE 0585
YO 0327
YS 9343
DH 0281
YG 0302
ZE 0586
Red lead in the middle of DH 0281
YK 2104
ZE 0465
ZE 0639
DZ 9501
JJ 0610
YL 0118
FB 0552
QB 0013
Instruction label SC 1040
Serial number label SC 0421
YK 3316
ZG 0219
YJ 0611



Viewed from the component side



Viewed from the solder side

ZE 0584

PARTS LIST

Note: Add 200 to all position numbers.

C 1,2	Tantalum			15 µF/16 V	CF 0028
C 3	Ceramic	2%		22 pF/100 V	CK 1221
C 4	-	-		100 pF/100 V	CK 2104
C 5	-			10 nF/63 V	CK 4105
C 6	Polyester			100 nF/50 V	CS 0468
C 8,9	Polypropylen			62 nF/160 V	CS 1011
C 14,15	-			62 nF/160 V	CS 1011
C 17,18	-			62 nF/160 V	CS 1011
C 19	Ceramic			1 nF/100 V	CK 3106
C 24-28	Polypropylen			62 nF/160 V	CS 1011
C 29	Ceramic			1 nF/100 V	CK 3106
C 34,35	Polypropylen			62 nF/160 V	CS 1011
C 37,38	-			62 nF/160 V	CS 1011
C 39	Ceramic			1 nF/100 V	CK 3106
C 41-43	Polyester			100 nF/50 V	CS 0468

J 1-3	Jumper (only for special versions)	JN 0021
J 4-6	Jack socket	JJ 0211

M 1	X-tal, 4,194304 MHz	MB 0055

P 1-3	Cermet	5 kΩ	PG 2519
P 4,5	-	10 kΩ	PG 3120
P 11-13	-	20 kΩ	PG 3208

Q 1-10	LED	SPG3431		QV 4029
Q 11-20	Si.	1N4150	50 V/0,4 A	QV 0247

R 1,2	Carbon	1/4 W	5%	10 Ω	RB 1100
R 3	Metal	-	1%	1,00 MΩ	RF 6100
R 4	-	-	-	2,21 kΩ	RF 3221
R 5,6	-	-	-	1,50 kΩ	RF 3150
R 7	Carbon	-	5%	33 kΩ	RB 4330
R 8	-	-	-	22 kΩ	RB 4220
R 9	-	-	-	3,3 kΩ	RA 0005
R 10	Metal	-	1%	1,50 kΩ	RF 3150
R 11,12	-	-	-	51,1 kΩ	RF 4511
R 13-16	-	-	-	16,9 kΩ	RF 4169
R 17,18	-	-	-	19,6 kΩ	RF 4196
R 19,20	-	-	-	178 kΩ	RF 5178
R 21	-	0,4 W	-	47,5 kΩ	RE 4475
R 22,23	-	1/4 W	-	42,2 kΩ	RF 4422
R 24	Carbon	-	5%	47 kΩ	RB 4470
R 25	-	-	-	10 kΩ	RB 4100
R 31	Metal	0,4 W	1%	4,75 kΩ	RE 3475
R 32	-	1/4 W	-	4,75 kΩ	RF 3475
R 33	-	0,4 W	-	4,75 kΩ	RE 3475
R 70	Thickfilm			5x1,5 kΩ	RZ 6315
R 80	-			5x47 kΩ	RZ 6450

V 1	Application Specific IC		VD 7014
V 2,3	Si. CA3141E	30 V/25 mA	QV 2004
V 4	Op.Amp.	TL062	VE 0136
V 5	Silicon	BC178	VB 0126
V 6-9	-	BC108	VB 0592
V 10-14	-	BC178	VB 0126

Z 1-3	Thickfilm	ZE 0593
Z 4	-	ZE 0594

15-pin socket	JJ 1510
16-pin IC socket	JJ 1622
Wire-wrap pins	JL 1001
Screen	OD 0412
Printed Circuit Board	XM 0191

Weighting Filters Channel 1

Weighting Filters Channel 2

Weighting Filters Channel 3

Amplifiers and Weighting Filter Channel 3

Overload Detector

Logic Control (ULA)

ZE 0593 Z1

ZE 0593 Z2

ZE 0593 Z3

ZE 0594 Z4

(VD 7014) V1

Cal. 1(X)

Cal. 2(Y)

Cal. 3(Z)

Sens.Adj.

J1 J2 J3 J4 J5 J6 J7 J8

AC Output 1(X)

AC Output 2(Y)

AC Output 3(Z)

Chassis

GND1 GND2 GND3 GND4

Input1 Input2 Input3

Overload

Output1 Output2 Output3

Control Bytes

Control RMS/Res

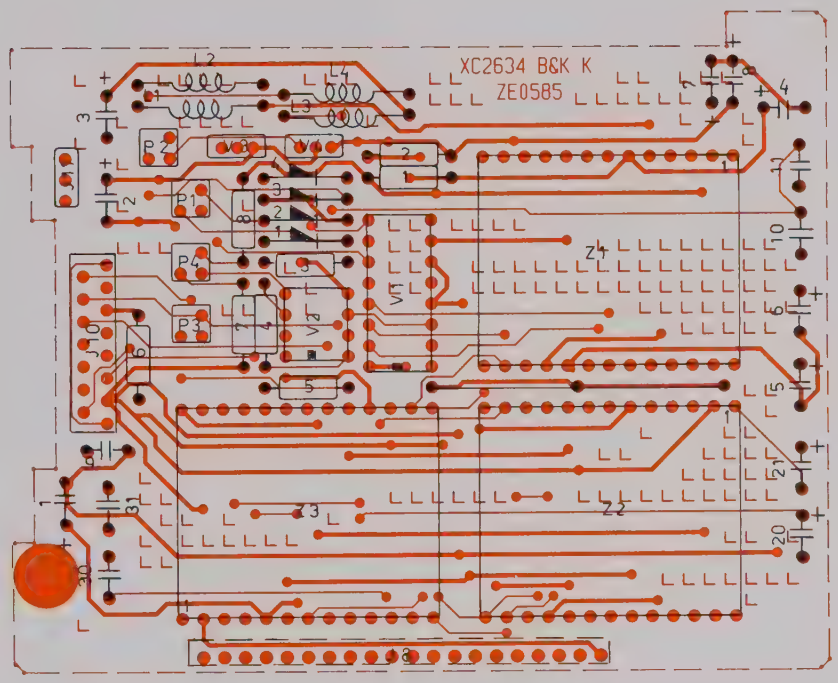
Control 1/8s/1s

RESET Peak

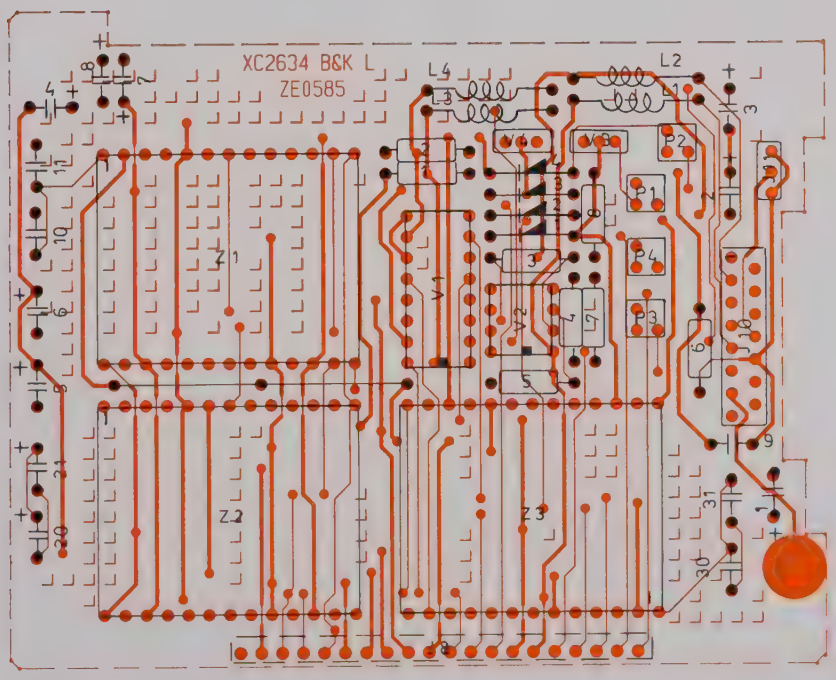
Control Output 1.2.3

+5,5V -5,5V +11V -11V 0V

+V_A -V_B



Viewed from the component side



Viewed from the solder side

C Q R

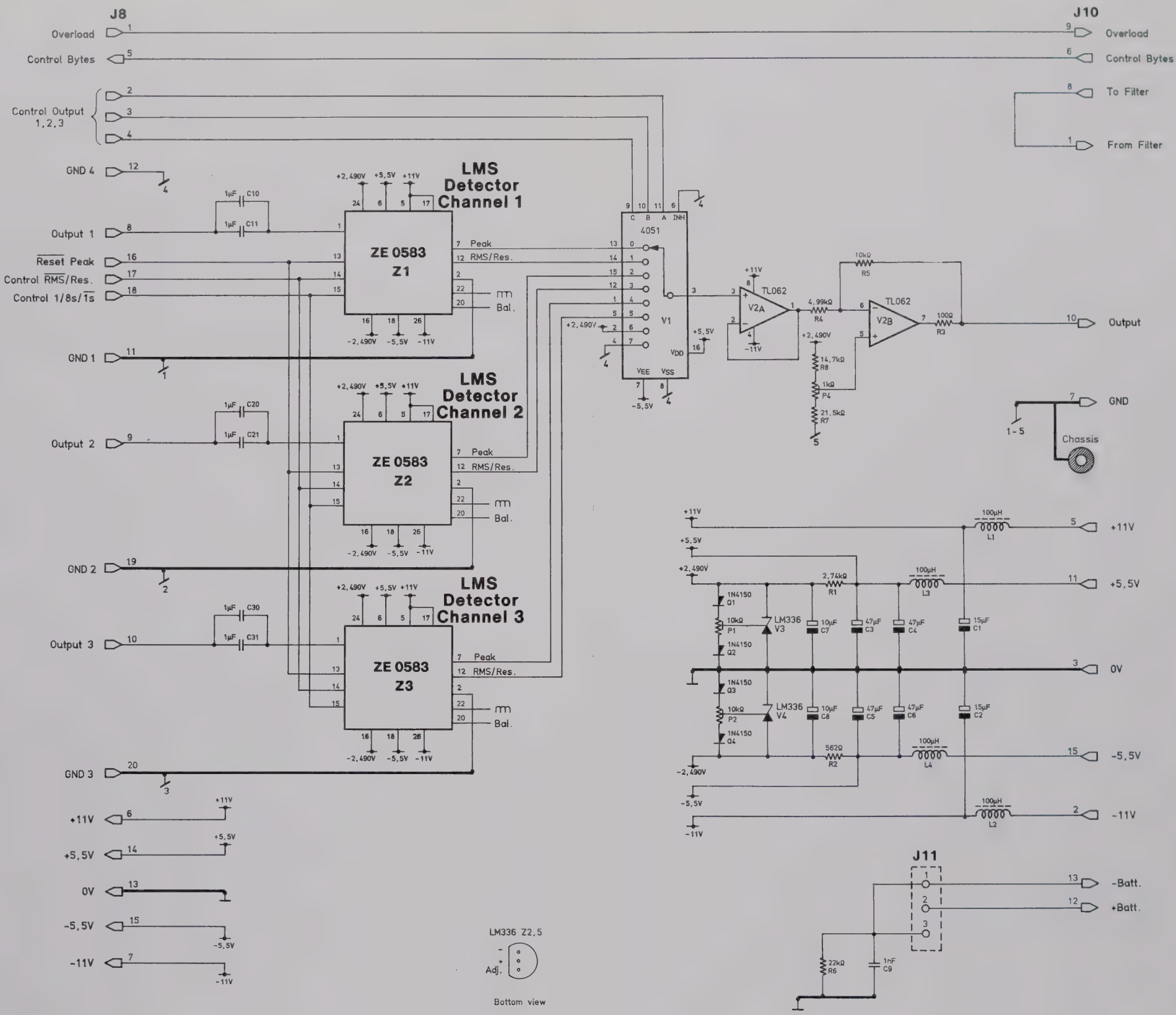
ZE 0585

ZE 0585 LMS Circuit

PARTS LIST

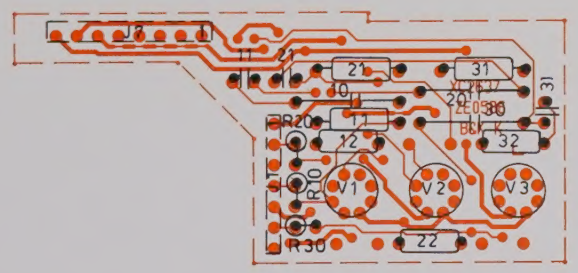
Note: Add 300 to all position numbers.

C 1,2	Electrolytic			15 µF/16 V	CE 0356
C 3-6	-			47 µF/6,3 V	CE 0219
C 7,8	-			10 µF/6,3 V	CE 0217
C 9	Ceramic			1 nF/1000 V	CK 3103
C 10,11	Polyester		5%	1 µF/50 V	CS 0460
C 20,21	-		-	1 µF/50 V	CS 0460
C 30,31	-		-	1 µF/50 V	CS 0460
J 8	Set of contacts				OD 0416
J 10	15-pin plug				JP 1504
J 11	Wire-wrap pins				JL 1001
L 1-4	Coil			100 µH	LJ 0021
P 1,2	Cermet			10 kΩ	PG 3120
P 4	-			1 kΩ	PG 2105
Q 1-4	Si.	1N4150		50 V/400 mA	QV 0247
R 1	Metal	1/4 W	1%	2,74 kΩ	RF 3274
R 2	-	-	-	562 Ω	RF 2562
R 3	Carbon	-	5%	100 Ω	RB 2100
R 4	Metal	-	0,1%	4,99 kΩ	RP 3499
R 5	-	-	-	10 kΩ	RP 4100
R 6	Carbon	-	5%	22 kΩ	RB 4220
R 7	Metal	-	1%	21,5 kΩ	RF 4215
R 8	-	-	-	14,7 kΩ	RF 4147
V 1	Analog Mux/De.mux			4051	VD 2088
V 2	Op.Amp.			TL062	VE 0136
V 3,4	Ref.	LM336		2,39-2,59 V/0,1 W	QV 0043
Z 1-3	Thickfilm				ZE 0583
	13-pin socket				JJ 1303
	16-pin IC socket				JJ 1622
	16-pin socket				JJ 1631
	8-pin socket				JJ 0817
	Printed Circuit Board				XC 2634

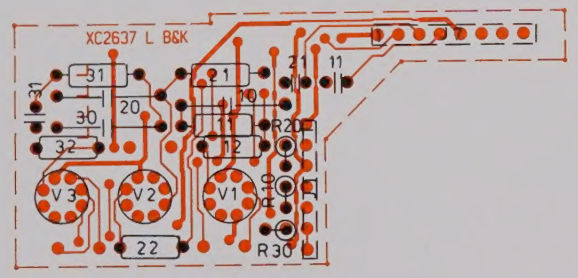

J8
Overload
Control Bytes
Control Output 1,2,3
GND 4
Output 1
Reset Peak
Control RMS/Res.
Control 1/8s/1s
GND 1
Output 2
GND 2
Output 3
GND 3
+11V
+5,5V
0V
-5,5V
-11V
LMS Detector Channel 1
LMS Detector Channel 2
LMS Detector Channel 3
ZE 0583 Z1
ZE 0583 Z2
ZE 0583 Z3
1µF C10
1µF C11
1µF C20
1µF C21
1µF C30
1µF C31
+2,490V
+5,5V
+11V
-2,490V
-5,5V
-11V
7 Peak
12 RMS/Res.
Bal.
4051
C B A INH
V1
VDD
VEE
VSS
TL062
V2A
V2B
4,99kΩ R4
10kΩ R5
100Ω R3
14,7kΩ R8
1kΩ P4
21,5kΩ R7
J10
Overload
Control Bytes
To Filter
From Filter
Output
GND
1-5
Chassis
LM336 Z2,5
Adj.
Bottom view
100µH L1
100µH L2
100µH L3
100µH L4
2,74kΩ R1
562Ω R2
1N4150 Q1
1N4150 Q2
1N4150 Q3
1N4150 Q4
10kΩ P1
10kΩ P2
LM336 V3
LM336 V4
10µF C7
10µF C8
47µF C3
47µF C5
47µF C4
47µF C6
15µF C1
15µF C2
J11
-Batt.
+Batt.
22kΩ R6
1nF C9

Input Circuit

ZE 0586



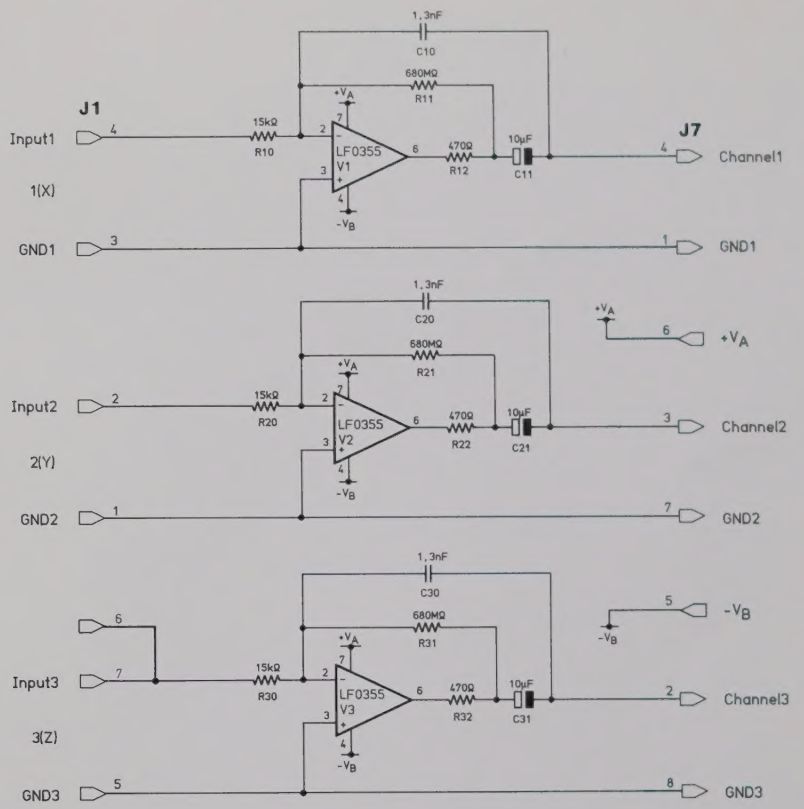
Viewed from the component side



Viewed from the solder side

Note: Add 100 to all position numbers.

C 10	Polystyrene	1%		1,3 nF/63 V	CT 1150
C 11	Tantalum			10 µF/3 V	CF 0032
C 20	Polystyrene	1%		1,3 nF/63 V	CT 1150
C 21	Tantalum			10 µF/3 V	CF 0032
C 30	Polystyrene	1%		1,3 nF/63 V	CT 1150
C 31	Tantalum			10 µF/3 V	CF 0032
R 10	Carbon	1/4 W	5%	15 kΩ	RB 4150
R 11	-	-	20%	680 MΩ	RH 0028
R 12	-	0,1 W	5%	470 Ω	RA 0058
R 20	-	1/4 W	–	15 kΩ	RB 4150
R 21	Carbon	1/4 W	20%	680 MΩ	RH 0028
R 22	-	0,1 W	5%	470 Ω	RA 0058
R 30	-	1/4 W	–	15 kΩ	RB 4150
R 31	-	-	20%	680 MΩ	RH 0028
R 32	-	0,1 W	5%	470 Ω	RA 0058
V 1-3	Op.Amp.			LF0355	VE 0107
	7-pin plug				JP 0719
	Set of contacts				OD 0415
	Printed Circuit Board				XC 2637



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